

Clinical Study Synopses

CIRCAID LEGGING VS. COMPRESSION STOCKINGS PRESSURE COMPARISON

Directed by Alan R. Hargens, Ph.D., at UCSD Medical Center, this study compared skin surface pressures underneath the inelastic CircAid T-3 M garment with Built-In Pressure System set to 40mmHg vs. an elastic 30-40mmHg below-knee compression stocking. The CircAid T-3 M leggings produced significantly higher skin pressures than elastic leggings at both leg regions ($p < .001$). **Mean pressures over all trials using the CircAid T-3 M leggings were 47 ± 3 and 35 ± 2 mmHg for ankle and below-knee regions, respectively.** Mean pressures using the elastic leggings over all trials were 26 ± 2 and 23 ± 1 mmHg for ankle and below-knee regions, respectively. **Only the CircAid T-3 M leggings produced a significant reverse-pressure gradient between the knee and the ankle ($p < .05$),** whereas the elastic leggings did not. **Published in *Vascular*, Volume 16, No. 1, 2008.**

CIRCAID LEGGING vs. UNNA BOOT

RG DePalma, M.D., RK Spence, M.D., JA Caprini, M.D., MR Nehler, M.D., J. Jenson, D.P.M., MP Goldman, M.D., WP Bundens, M.D. In a multi-center prospective, randomized study, the cost and healing rates for treatment of venous ulcers was compared between the CircAid T-3 Boot and Unna boot. Cost of treatment was significantly less. **The total cost of treatment was 38% less with the T-3 Boot and this difference was statistically significant.** Healing rates were 45% faster with T-3 Boots, though this value did not reach statistical significance because of large standard deviations. Presented at the eleventh annual meeting of the American Venous Forum, February 18-21, 1999 Dana Point, CA. **Published November / December 1999 in *Vascular Surgery*.**

WALTER REED ARMY MEDICAL CENTER

Conducted by J. Leonel Villavicencio MD, Director Vascular and Lymphatic Surgery Clinic. The completed study comparing 24 extremities shows that at three months, patients wearing the non-elastic CircAid system had significantly faster ulcer-healing rates as compared to patients wearing a conventional four layer elastic compression system. **Published December 2005 in the *Journal of Vascular Surgery*.**

NASA AMES RESEARCH CENTER

Alan R. Hargens, Ph.D., physiologist and Space Station Project Scientist, in developing garments to combat the effects of microgravity in space on astronauts, directed two studies. **The results of one study have been published in the *Annals of Vascular Surgery*, November 1994, entitled, "Intramuscular Pressures Beneath Elastic and Inelastic Leggings".** The studies compared the effects of the non-elastic CircAid Legging and 30-40mm elastic stockings on Intramuscular pressures (IMP) in soleus and tibialis muscles taken by catheter inserted pressure transducers. IMPs, which are more relevant to tissue nutrition and venous return than surface or subcutaneous pressures, taken on 10 healthy subjects, were significantly higher with the non-elastic legging than with elastic stockings. **During recumbency, elastic stockings produced high surface compression. The non-elastic legging did not exert such high surface compression, yet effectively generated high IMPs during standing and walking.**

.CIRCAID LEGGING vs. COMPRESSION STOCKINGS

Richard K. Spence, MD, Elizabeth Cahall, RN, BSN, Department of Surgery, Cooper Hospital/University Medical Center, Robert Wood Johnson Medical School in Camden, New Jersey. This study compared the ability of 30-40 mmHg below-knee compression stockings to the CircAid Garment (CircAid Products, San Diego, CA) to reduce and maintain limb circumference and to improve abnormal venous hemodynamics in 10 patients (20 limbs) with Class III CVI, defined by history, air plethysmography (APG) chronic stasis and/or ulceration. APG studies plus ankle/calf measurements were taken on separate days with no compression (B), stockings (S) and CircAid. Tests were performed at two and six hours after patients had donned new garments. Results were analyzed using non-parametric measures because of sample size. Conclusions: In this small group of patients, the **CircAid garment was superior to stockings in reducing and maintaining limb circumference and venous volume while decreasing reflux and improving hemodynamics in Class III CVI patients.** Presented at the 8th Annual Meeting Of The American Venous Forum, February 22-24, 1996 San Diego, CA. **Published November 1996 in the *Journal of Vascular Surgery*.**

THE NON-HEALING VENOUS STASIS ULCER

RK Spence, MD, AC Cernaianu, MD, WH Hardesty, MD, AS Brown, MD, JB Alexander, MD, MJ Pello, MD, UA Atabek, MD, RC Camishion, MD, Cooper Hospital, RWJ Medical School, Camden, New Jersey USA. The clinical study results were presented at the 16th Annual World Congress of the International Union of Angiology in Paris, September of 1992. This study compared 13 patients with 15 chronic venous stasis ulcer limbs, which had failed to respond to compression therapy with Unna's Boot or elastic hose, primarily because of poor compliance. The CircAid garment was used as the alternative compression therapy. Within 12 months of wearing CircAid, in conjunction with local wound care, 10 of the 15 ulcers had healed completely (67%), two were grafted, and the remaining three showed evidence of progressive healing. **Therefore, overall improvement was seen in 13 of 15 ulcers (87%). None of the ulcers have recurred up to 24 months later with continued use of the garment.**

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